

**EMSL Analytical - Industrial Hygiene**

200 Route 130 North, Cinnaminson, NJ 08077

Phone/Fax: (800) 220-3675 /

<http://www.EMSL.com>[IndustrialHygienelab@emsl.com](mailto:IndustrialHygienelab@emsl.com)

EMSL Order: 281802204  
CustomerID: SREC85  
CustomerPO: CC-031615  
ProjectID:

Attn: **Alex Green**  
**S&R Environmental Consulting, Inc.**  
**5801 Logan Street, #200**  
**Denver, CO 80216**

Phone: (303) 297-1645  
Fax: (303) 297-1646  
Received: 05/15/18 10:50 AM  
Analysis Date: 5/16/2018  
Collected: 5/14/2018

**Test Report: PM10 Analysis of Particulate Matter Performed by EPA Reference Method**  
**40 CFR, Chapter I, Part 50, App. J**

Sample	Location	Volume (L)	Initial Weight (mg)	Final Weight (mg)	Sample Weight (mg)	Concentration ( $\mu\text{g}/\text{m}^3$ )	Reporting Limit ( $\mu\text{g}/\text{m}^3$ )	Notes
18-0613	3rd Floor	2568	54.212	56.474	2.3	900	0.78	
281802204-0001								
18-0630	4th Floor	2432	59.842	60.258	0.42	170	0.82	
281802204-0002								

Notes: Discernable field blank not submitted with samples.  
Results are not field blank corrected.

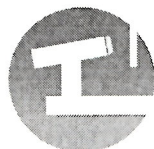
Analyst(s)

Thomas Cancglin (2)

Scott Van Etten, CIH, Laboratory Manager  
or other approved signatory

The laboratory is not responsible for data reported in  $\text{mg}/\text{m}^3$ , which is dependent on volume collected by non-laboratory personnel. This report relates only to the samples reported above. This report may not be reproduced, except in full, without written approval by EMSL. Samples received in good condition unless otherwise noted.  
Samples analyzed by EMSL Analytical - Industrial Hygiene Cinnaminson, NJ

Initial report from 05/16/2018 14:57:25



**HAYES**

MICROBIAL CONSULTING  
3005 East Boundary Terrace, #F  
Midlothian, VA 23112, USA  
804.562.3435 Fax: 804.447.5562

contact@hayesmicrobial.com  
<http://hayesmicrobial.com/>

Analysis Report prepared for

## S&R Environmental Consulting

5801 Logan St. Suite 200  
Denver, CO. 80216  
Phone: (303) 297-1645

Job Number: 018013  
Job Name: EPA/Boots  
Date Sampled: 05-14-2018  
Date Analyzed: 05-15-2018  
Report Date: 05-15-2018

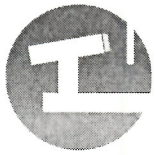
EPA Laboratory ID# VA01419



AIHA EMPAT Lab ID# 188863

Mold License: LAB1021

License: #PH-0198



**HAYES**

MICROBIAL CONSULTING  
3005 East Boundary Terrace, #F  
Midlothian, VA 23112, USA  
804.562.3435 Fax: 804.447.5562

**HMC #18014987**

**S&R Environmental Consulting**  
**5801 Logan St.**  
**Suite 200**  
**Denver, CO 80216**

May 15, 2018

Client Job Number: 018013  
Client Job Name: EPA/Boots

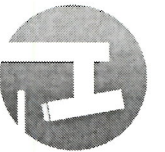
Dear S&R Environmental Consulting,

We would like to thank you for trusting Hayes Microbial for your analytical needs. On May 15, 2018 we received 3 samples by FedEx for the job referenced above. 3 samples were received in good condition.

The results in this analysis pertain only to this job, collected on the stated date and should not be used in the interpretation of any other job. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial Consulting. In no event, shall Hayes Microbial Consulting or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of your use of the test results.

Steve Hayes, BSMT(ASCP)  
Laboratory Director  
Hayes Microbial Consulting, LLC



**HAYES**

MICROBIAL CONSULTING  
3005 East Boundary Terrace, #F  
Midlothian, VA 23112, USA  
804.562.3435 Fax: 804.447.5562

**S&R Environmental Consulting**  
5801 Logan St., Suite 200  
Denver, CO 80216  
Phone: (303) 297-1645

**Particle Analysis**  
SOP #HMC114

**HMC #18014987**

Job Number:	018013	Job Name:	EPA/Boots	Date Collected:	05/14/2018
Collected by:	Tom			Date Received:	05/15/2018
Email:	tom@srenvironmentalconsulting.com			Date Reported:	05/15/2018

HMC ID Number	18014987 - 1			18014987 - 2			18014987 - 3			
Sample ID#	2263151			2263129			2263150			
Sample Name	3rd Floor			4th Floor			Entrance Main Lobby			
Sample Volume	75 liters			75 liters			76 liters			
Reporting Limit	13 Particles / m3			13 Particles / m3			13 Particles / m3			
Particle	Raw Count	Count / m3	% of Total	Raw Count	Count / m3	% of Total	Raw Count	Count / m3	% of Total	
Dander	240	3183	35.8%	60	792	50.4%	130	1711	73.1%	
Cellulose Fibers	6	80	< 1%	3	40	2.5%	2	26	1.1%	
Synthetic Fibers	1	13	< 1%				1	13	< 1%	
Fiberglass Fibers										
Wood Fibers	1	13	< 1%							
Animal Hair										
Plant Hair										
Human Hair										
Dust Mites, Parts										
Carpet Beetle larvae parts										
Insect Parts										
Insect Frass (Feces)										
Feather Barbule										
Pollen										
Gypsum										
Opaque Particles										
Talc	420	5570	62.6%	55	726	46.2%	35	461	19.7%	
Silicates	3	40	< 1%	1	13	< 1%	2	26	1.1%	
Mineral Salts										
Ash-like Soot							5	66	2.8%	
Char-like Soot							1	13	< 1%	
Aciniform-like Soot							2	26	1.1%	
Total	671	8899		119	1571		178	2342		

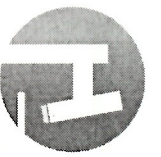
Signature: P. Ramo

Date: 05/15/2018

Reviewed by: Stephen N. Hayes

Date: 05/15/2018





# HAYES

**MICROBIAL CONSULTING**  
3005 East Boundary Terrace, #F  
Midlothian, VA 23112, USA  
804.562.3435 Fax: 804.447.5562

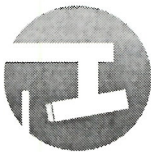
**S&R Environmental Consulting**  
5801 Logan St., Suite 200  
Denver, CO 80216  
Phone: (303) 297-1645

**Particle Information**  
  
**HMC #18014987**

## Particle Analysis

Hayes Microbial Consulting Particle Analysis test is based on the initial screening procedures from ASTM #D6602. HMC only does light, polarized light, and phase contrast microscopy. No SEM or X-ray defraction is done. Below are some guidelines to help you figure out the totals for the dander, fibers, pollen, and other particle counts by light microscopy.  
\*Estimated Normal Ranges are based on experience only. There are no standard ranges for this type of testing.

* Estimated Normal Range		
Particle		
Dander	Home (Carpeted Areas) Home (Hard Surface Areas) Office or Classroom (Carpeted) Office or Classroom (Hard Surface Areas)	Air 1,000-6,000 / M3 500-5,000 / M3 4,000-12,000 / M3 3,000-10,000 / M3  Surface 10,000-16,000 / cm2 5,000-16,000 / cm2 14,000-24,000 / cm2 12,000-20,000 / cm2 0-1,600 / cm2 0-1,600 / cm2 0-1,600 / cm2 0-400 / cm2 0-1,800 / cm2 0-2,000 / cm2
Cellulose Fibers		0-250 / M3
Synthetic Fibers		0-250 / M3
Fiberglass Fibers		0-60 / M3
Gypsum Fibers		0-400 / M3
Talc		0-250 / M3
Dust Mites (parts)		0-30 / M3
Insect Parts		0-30 / M3
Animal Hair		0-30 / M3
Wood Fibers		0-60 / M3
Plant Hairs		0-60 / M3
Human Hair		0-60 / M3
Carpet Beetle Larvae		0-40 / M3
Insect Frass		0-40 / M3
Feather Barbules		0-40 / M3
Opaque Particles		0-100 / M3
Starch		0-40 / M3
Ash-like Soot		0-60 / M3
Char-like Soot		0-60 / M3
Aciniform-like Soot		0-100 / M3
Silicates	(Varies greatly depending on area)	0-500 / M3
Pollen	Varies with outdoor pollen levels and whether there are live indoor plants.	M3 = per cubic meter cm2 = per sq. centimeter



**HAYES**

**MICROBIAL CONSULTING**  
3005 East Boundary Terrace, #F  
Midlothian, VA 23112, USA  
804.562.3435 Fax: 804.447.5562

**S&R Environmental Consulting**  
5801 Logan St., Suite 200  
Denver, CO 80216  
Phone: (303) 297-1645

## Particle Descriptions

**HMC #18014987**

### Aciniform-like Soot

**Description:** Also known as black carbon, aciniform soot comes from the combustion of oil based or hydrocarbon containing materials. This type of soot should not be confused with Carbon Black, which is a manufactured product that has been used in commerce for over a century and consists of a fine black powder of nearly pure elemental carbon.

**Sources:** Sources are from the combustion of waste oil, fuel oil, gasoline fuel, diesel fuel, coal, coal-tar pitch, oil shale, rubber, plastics and resins, natural gas fireplaces and stoves, candles etc.

### Ash-like Soot

**Description:** Ash-like soot is formed from the combustion of wood products.

**Sources:** Sources are wood fireplaces, house fires, forest fires, and burning of leaves and other yard debris.

### Cellulose Fibers

**Description:** Cellulose fibers are natural fibers from plant material.

**Sources:** Sources of cellulose fibers are paper, cardboard, insulation material.

### Char-like Soot

**Description:** Char-like soot comes from the incomplete combustion of wood products.

**Sources:** Sources are wood fireplaces, house fires, forest fires, and burning of leaves and other yard debris.

### Dander

**Description:** Dander is dead skin cells. The average person sheds about 600,000 skin cells per day.

**Sources:** Sources are people and animals.

### Silicates

**Description:** Silicates comprise the majority of the Earth's crust. Sand, Portland cement, and thousands of minerals are examples of silicates.

**Sources:** Sources are sand and cement.

### Synthetic Fibers

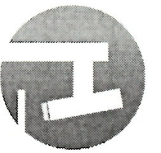
**Description:** Synthetic fibers are man-made fibers such as nylon, polyester, and polyolefin.

**Sources:** Sources of synthetic fibers are carpet, upholstery and clothing.

### Talc

**Description:** Talc is a mineral composed of hydrated magnesium silicate

**Sources:** Sources of talc are powder, personal hygiene and cosmetics products, and in powdered laundry detergents and carpet cleaners.



**HAYES**

**MICROBIAL CONSULTING**  
3005 East Boundary Terrace, #F  
Midlothian, VA 23112, USA  
804.562.3435 Fax: 804.447.5562

**S&R Environmental Consulting**

5801 Logan St., Suite 200  
Denver, CO 80216  
Phone: (303) 297-1645

**Particle Descriptions**

**HMC #18014987**

**Wood Fibers**

**Description:** Fibers from woody plants, trees, and lumber.

**Sources:** Wood and wood products.